

AMENDMENTSIN THE SPECIFICATION:

The paragraph under the heading "Cross Reference to Related Applications" has been amended to read as follows:

A1
-- This application is a continuation-in-part of co-pending application 09/501,467, filed on February 9, 2000, which is a continuation-in-part of 09/350,620, filed on July 7, 1999, now U.S. Pat. No. 6,117,366, which is a continuation-in-part of 09/335,257, filed on June 17, 1999, now U.S. Pat. No. 6,177,365. These parent applications are herein entirely incorporated by reference.--

The paragraph beginning under the heading "Field of the Invention" on page 1 has been amended to read as follows:

A2
--This invention relates generally to coated inflatable fabrics and more particularly concerns airbag cushions to which very low add-on amounts of coating have been applied and which exhibit extremely low air permeability. The inventive inflatable fabrics are primarily for use in automotive restraint cushions that require low permeability characteristics (such as side curtain airbags). Traditionally, heavy, and thus expensive, coatings of compounds such as neoprene, silicones and the like, have been utilized to provide such required low permeability. The inventive fabric utilizes an inexpensive, very thin coating to provide such necessarily low permeability levels. Thus, the inventive coated inflatable airbag comprises a film laminated on at least a portion of the target fabric surface wherein the film possesses a tensile strength of at least

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2,000 psi and an elongation at break of at least 180%. The film provides a low permeability airbag cushion exhibiting a leak-down time of at least 5 seconds wherein the film is present on the surface in an amount of at most 2.5 ounces per square yard of the fabric.--

[The paragraph beginning on line 8 of page 12 has been amended to read as follows:]

A3

--Of particular interest as the desired films are polyurethanes, although any film which possesses the same desired tensile strength and elongation characteristics noted above may function within this inventive low permeability airbag cushion. Copolymers of polyurethanes, polyamides, and the like, may be utilized, as merely one type of example. Also, such films may or may not be cross-linked on the airbag surface. Preferably, the film is a polyurethane and most preferably is a polycarbonate polyurethane or a polyurethane film based on polytetramethylene glycol diol (available from Deerfield Urethane, Inc., Ivyland, PA, under the tradename DUREFLEX™ PT9400). This specific film exhibits a tensile strength of 8,000 psi and an elongation at break of about 600%. Such a film may be added in an amount of as low as 2.2 ounces per square yard on the desired cushion and still provide the requisite high leak-down time characteristics. Of course, any other film meeting the characteristics as noted above is encompassed within this invention; however, the add-on weights of other available films may be greater than this preferred one, depending on the actual tensile strength and elongation properties available. However, the upper limit of 2.5 ounces per square yard should not be exceeded to meet this invention. The desired films may be added in multiple layers if desired as long the required thickness for the overall coating is not exceeded. Alternatively, the multiple layer film/coating system may also be utilized as long as at least one film possessing the desired tensile strength and elongation at break is utilized and the requisite low permeability is exhibited.--

The paragraph beginning on line 20 of page 13 has been amended to read as follows:

114 --Among the other additives particularly preferred within or on the film (or films) are heat stabilizers, flame retardants, primer adhesives, and materials for protective topcoats. A potentially preferred thickener is marketed under the trade designation NATROSOL™ 250 HHXR by the Aqualon division of Hercules Corporation which is believed to have a place of business at Wilmington, Delaware. In order to meet Federal Motor Vehicle Safety Standard 302 flame retardant requirements for the automotive industry, a flame retardant is also preferably added to the compounded mix. One potentially preferred flame retardant is AMSPERSE® F/R 51 marketed by Amspec Chemical Corporation which is believed to have a place of business at Gloucester City New Jersey. As noted above, primer adhesives may be utilized to facilitate adhesion between the surface of the target fabric and the film itself. Thus, although it is preferable for the film to be the sole component of the entire coating in contact with the fabric surface, it is possible to utilize adhesion promoters, such as isocyanates, epoxies, functional silanes, and other such resins with adhesive properties, without deleteriously effecting the ability of the film to provide the desired low permeability for the target airbag cushion. A topcoat component, as with potential silicones, as noted above, may also be utilized to effectuate proper non-blocking characteristics to the target airbag cushion. Such a topcoat may perform various functions, including, but not limited to, improving aging of the film (such as with silicone) or providing blocking resistance due to the adhesive nature of the coating materials (most noticeably with the preferred polyurethane polycarbonates).--

The paragraph beginning on line 10 of page 15 has been amended to read as follows:

AS -- Two other tests which the specific coated airbag cushion must pass are the oven (heat) aging and humidity aging tests. Such tests also simulate the storage of an airbag fabric over a long period of time upon exposure at high temperatures and at relatively high humidities. These tests are actually used to analyze alterations of various different fabric properties after such a prolonged storage in a hot ventilated oven ($>100^{\circ}\text{C}$) (with or without humid conditions) for 2 or more weeks. For the purposes of this invention, this test was used basically to analyze the air permeability of the coated side curtain airbag by measuring the characteristic leak-down time (as discussed above, in detail). The initially produced and stored inventive airbag cushion should exhibit a characteristic leak-down time of greater than about 5 seconds (upon re-inflation at 10 psi gas pressure after the bag had previously been inflated to a peak pressure above about 15 psi and allowed to fully deflate) under such harsh storage conditions. Since polyurethanes, the preferred elastomers in this invention, may be deleteriously affected by high heat and humidity (though not as deleteriously as certain polyester and polyether-containing elastomers), it may be prudent to add certain components within a topcoat layer and/or within the elastomer itself. Antioxidants, antidegradants, and metal deactivators may be utilized for this purpose. Examples include, and are not intended to be limited to, IRGANOX® 1010 and IRGANOX® 565, both available from CIBA Specialty Chemicals. This topcoat may also provide additional protection against aging and thus may include topcoat aging improvement materials, such as, and not limited to, polyamides, NBR rubbers, EPDM rubbers, and the like, as long as the elastomer composition (including the topcoat) does not exceed the 3.0 ounces per square yard (preferably much less than that, about 1.5 at the most) of the add-on weight to the target fabric.--

lines page 18
The paragraph beginning on line 1 of page 20 has been amended to read as follows:

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--Recently, a move has been made away from both the multiple-piece side curtain airbags (which require great amounts of labor-intensive sewing to attached woven fabric blanks) and the traditionally produced one-piece woven cushions, to more specific one-piece woven fabrics which exhibit substantially reduced floats between woven yarns to substantially reduce the unbalanced shifting of yarns upon inflation, such as in Ser. No. 09/406,264, now U.S. Pat. No. 6,220,309, to Sollars, Jr., the specification of which is completely incorporated herein. These one-piece woven bags are generally produced on dobby or jacquard fluid-jet looms, preferably the utilized one-piece airbag is made from a jacquard weaving process. With such an improvement, the possibility of high leakage at seams is substantially reduced. These airbags provide balanced weave constructions at and around attachment points between two layers of fabrics such that the ability of the yarns to become displaced upon inflation at high pressures is reduced as compared with the standard one-piece woven airbags. Unfortunately, such inventive one-piece woven bags are still problematic in that the weave intersections may be displaced upon high pressure inflation such that leakage will still most likely occur at too high a rate for proper functioning. As a result, there is still a need to coat such one-piece woven structures with materials which reduce and/or eliminate such an effect. However, such one-piece woven structures permit extremely low add-on amounts of elastomeric coatings for low permeability effects. In fact, these inventive airbags function extremely well with low add-on coatings below 1.5 and as low as about 0.8 ounces per square yard.--